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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/526,776	03/08/2005	Ernie Davison	670.001US1	6799

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EXAMINER	
NGUYEN, TRAN N	

ART UNIT	PAPER NUMBER
2834	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/526,776	DAVISON, ERNIE	
	Examiner	Art Unit	
	Tran N. Nguyen	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *pre-amendment 3/7/07*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18 and 20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *14,15,17 and 18* is/are allowed.

6)☒ Claim(s) *1,2,5,6,9-11,13,16 and 20* is/are rejected.

7)☒ Claim(s) *3,4,7,8 and 12* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

Claim 12 is objected because it does not depend from a preceding claim, but rather depends from a following claim 13. For speeding prosecution of the application, claim 12 has been treated as if claim 12 depends from claim 11.

Claim 18 is objected because of these terms "***RGT, SGT, LRS***" should be completely spelled out to avoid any indefinite issue.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. **Claims 1-2, 5-6, 16 and 20** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Campagnuolo et al (US 4,227,092)** in view of **AbuAkeel (US 6,566,777)**.

Campagnuolo discloses a harmonic drive assembly (figs 1-3) comprising: a cylindrical electromagnetic core (50), a flexispline (44) and rotatable hub (42) mounted on support assembly (12, 14,1 6), wherein the core having windings (fig 1) to produce a commutated and controlled rotating magnetic field, a flexispline (44) having a disc portion (58) and hollow cylindrical portion integrally joined together to form an open cylindrical shape with an open end thereof,

wherein the flexispline (44) is mounted so that the flexispline encompasses said magnetic core and is in a coaxial relationship with said core, said cylindrically shaped portion of said flexispline comprising an elastically deformable magnetic material, particularly steel (col 3 lines 34+) and being in a closely spaced relationship with said core (50) but not touching said core in an unexcited magnetic state, said flexispline having toothed external gear (47 fig 2-3) formed thereon in the form of an elastically deformable band encircling the exterior surface of said hollow cylinder generally near the open end of said flexispline (44), hub (42) mounted on said support, particularly on a hollow post (46 fig 1) adjacent to and coaxially with said flexispline, said hub having complementary ring gear (45 figs 2-3) overlying but closely spaced with said flexispline's gear (47); as shown in fig 3, wherein said open end of said flexispline (44) and said gear (47) being distorted in the presence of a magnetic field in said core to form a general multilobed shape such that said gear (47) on said flexispline exhibits toothed engagement with said ring gear (45) of the hub at the protruding lobes on the distorted flexispline shape formed by the magnetic field. Campanuolo substantially discloses the claimed invention, except for the limitations of the harmonic drive assembly is a flexispline motor, instead of an electrical power generator as of Campanuolo.

AbuAkeel, however, teaches a flexispline drive assembly function as a harmonic drive motor for convert electrical energy to mechanical energy with alternate high speed or high torque output options. The AbuAkeel's flexispline motor comprises a cylindrical flexispline mounted coaxially within a magnetic core (fig 1-2) wherein the magnetic field that attracts and deforms the flexispline to produce rotation, and an output shaft coupled to the flexispline for providing mechanical power output.

Those skilled in the art would understand that the AbuAkeel's essential teaching is to implement a flexispline drive device as a harmonic drive motor for convert electrical energy to mechanical energy to produce output torque, which is the reversing operation of Campanuolo's

flexispline generator that converting supplied mechanical motion, i.e., torque, into electrical energy output.

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the Campanuolo's flexispline drive power source into a flexispline motor, as the concept taught by AbuaKaeel. Doing so would implement the harmonic drive device to operate as a flexispline motor for converting electrical input energy into mechanical output energy. Furthermore, this would be obvious because an artisan would have the necessary knowledge to apply the essential teaching of AbuaKaeel in modifying the flexispline drive device to function as flexispline motor, because the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Regarding the limitations of the flexispline having internal ring gear meshing with the hub's external ring gear, it would have been obvious to one having ordinary skill in the art at the time the invention was made to reversely arrange the Campanuolo flexispline's ring gear and the hub's ring gear so that flexispline having internal ring gear meshing with the hub's external ring gear. Doing so would enable the flexispline to encompass the hub that would have a smaller size comparing to the flexispline. Also, such re-arrangement of the components is obvious because it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse, 86 USPQ 70,* also, one of ordinary skill in the art would have the necessary mechanical skill to make simple reversals of positions of mechanical parts without an express teaching in a reference (*In re Bozek, 416 F.2d 1385, 1390, 163 USPQ 545, 549 (CCPA 1969).*

2. **Claims 9-11** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Stephonson (US 5,043,618)** *or alternately* over **Hendershot (US 4883999)** in view of **Campagnuolo et al (US 4,227,092)** *or alternately* in view of **Kumagai (JP-2-275146)**.

Stephonson (figs 2-3), *or alternately* **Hendershot** (figs 1-8B), each discloses an electromagnetic core comprising a magnetic laminated core having radially extended poles surrounding the core hub, and winding fitted to each pole, the winding on each complementary pole group being energized to produce magnetic fields, wherein the windings are connected either in series or parallel. However, either **Stephonson**, *or alternately* **Hendershot** does not discloses that the electromagnetic core is being incorporating in a flexispline drive device so that the energized electromagnetic core's magnetic fields would produce multilobal flexispline distortions.

Campagnuolo, *or alternately* **Kumagai**, each teaches a flexispline device where electromagnetic core's magnetic fields would produce multilobal flexispline distortions in order to function as harmonic drive apparatus. Such incorporation of the either **Stephonson**, *or alternately* **Hendershot** disclosed electromagnetic core with laminated core hub and winding would be an implementation that would efficiently produce magnetic fields for the flexispline.

3. **Claim 13** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Kometani et al (US 6, 288,471)** in view of **Campagnuolo et al (US 4,227,092)** *or alternately* in view of **Kumagai (JP-2-275146)**.

Kometani discloses an electromagnetic core comprising a magnetic laminated core having radially extended poles surrounding the core hub, wherein the poles having various widths (figs 7-8) while being separate by slots having uniform width. However Kametani does

not disclose that the electromagnetic core is being incorporating in a flexispline drive device so that the energized electromagnetic core's magnetic fields would produce multilobal flexispline distortions.

Campagnuolo, *or alternately* **Kumagai**, each teaches a flexispline device where electromagnetic core's magnetic fields would produce multilobal flexispline distortions in order to function as harmonic drive apparatus. Such incorporation of the magnetic core with poles having various widths would be an implementation that would efficiently produce magnetic fields for the flexispline.

Allowable Subject Matter

4. **Claims 3-4, 7-8 and 12** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. **Claims 14-15 and 17-18** are allowed.

Communication

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tran N. Nguyen whose telephone number is 571-272-2030 or via **email at Tran.Nguyen@USPTO.gov**

The examiner can normally be reached on 7:00 AM - 4:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the Examiner can be reached via email. The applicant is advised that all communications via email are unofficial; emailing is only an alternative way to establish contact with the Examiner.

If attempts to reach the examiner by telephone or email are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on 571-272-2044. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300. (Note: **Use this Central Fax number 571-273-8300 for all official response.**)

Do **not** use the Examiner's RightFax number without informing the Examiner first because, according to the USPTO policy, any document being sent via RightFax is treated as unofficial response and will not be officially dated until it is routed to the Central Fax.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tran N. Nguyen
Primary Examiner
Art Unit 2834